SECTION 16121

INSULATED CONDUCTORS

PART 1 - GENERAL

1.1 DESCRIPTION OF WORK

A. Work Included: This Section specifies furnishing and delivery of insulated conductors for use in feeder taps, jumpers and other assemblies as part of an overhead contact system with a nominal voltage of 600 volts dc as shown on the Contract Drawings.

1.2 REFERENCES

Insulated conductors shall be manufactured and tested in accordance with the pertinent provisions of the most current applicable standards of the American Society for Testing and Materials (ASTM), Insulated Cable Engineers Association (ICEA), National Electrical Manufacturer's Association (NEMA), National Electric Safety Code (NESC), National Electric Code (NEC), Association of American Railroads (AAR), and other recognized standards including, but not limited to those listed below:

ICEA No. S-68-516/NEMA No. WC8-1976 - Standards Publication for Ethylene-Propylene Rubber Insulated Wire and Cable for the Transmission and Distribution of Electrical Energy

ASTM-B8 - Specification for Concentric-Lay-Stranded Copper Conductors, Hard, Medium-hard or Soft

ASTM-B33 - Standard Specification for Tinned Soft or Annealed Copper Wire for Electrical Purposes

ASTM-B172 - Standard Specification for Rope-Lay-Stranded Copper having Bunch-Stranded Members for Electrical Conductors

ASTM-B173 - Rope-Lay-Stranded Copper Conductors having Concentric-Stranded Members for Electrical Conductors

ASTM-B174 - Specification for Bunch-Stranded Copper Conductors for Electrical Conductors

NEMA WC26 - Wire and Cable Packaging

One copy each of the above standards shall be furnished to the Authority for their use and permanent record.

1.3 SUBMITTALS

A. The following information shall be submitted in accordance with Section 01300:

1. Shop drawings, catalog cuts, and other forms of descriptive data delineating the construction of the cables specified herein.

2. Special storage instructions, if applicable.

3. Recommended splicing, repair materials and procedures.

1.4 DELIVERY, STORAGE AND HANDLING

A. Shipping shall take place in conformance with appropriate industry standards for packing, sealing and shipping. The Contractor shall ensure that all materials furnished are suitably packaged and protected against damage during delivery and transportation. All conductors shall be shipped on reels, suitable for the weight of the conductors and shall be protected from damage. The diameter of drum shall be sufficiently large so as to minimize difficulty with waves or kinks when the conductor is strung.

B. The conductors shall be handled and otherwise used in accordance with the manufacturer's instructions, so as to ensure that the products are not damaged or misused prior to installation.

C. Any damage to the conductors in transit shall be the Contractor's responsibility, and all repairs and replacements shall be accomplished by the Contractor at no cost to the Authority.

D. Each reel shall consist of one continuous, unspliced conductor and shall have the required length of conductor within a tolerance of plus 50 feet and minus zero feet.

E. Each reel shall have a strong, weatherproof tag or marker securely fastened to it, showing the size and type of conductor as well as the ASTM designation, name and mark of the manufacturer, total reel length, weight and manufacturer's special instructions.

F. Reels shall be tagged with material description and purchase order number.

1.5 WARRANTY

A. The Contractor shall guarantee that the cable furnished under this Contract is of first-class material and workmanship throughout and agrees to replace any length of cable failing during normal and proper use, within one year of date of placing in service which shows defects of material or workmanship, provided, in each case, that immediate written notice of such failure is given to the Contractor with all reasonable opportunity to inspect such failure.

B. The date of placing in service shall be interpreted as the date on which operating voltage was first applied.

PART 2 - PRODUCTS

2.1 4/0 AWG, EXTRA FLEXIBLE, INSULATED CONDUCTOR

A. Cable shall be used for feeder tap connections on an overhead contact system with nominal voltage of 600V. The cable shall be in accordance with MBTA Specification P-179, except as modified herein, which shall be included as Appendix A to this Section.

B. The cable conductor shall be single conductor, black, extra flexible ethylene-propylene rubber insulated, neoprene or hypalon jacketed in accordance with applicable requirements of ICEA No. S-68-516/NEMA No. WC8-1976, 5/64 inch insulation and 3/64 inch jacket and rated 1,000 volts, 90˚C.

C. The conductors shall be 4/0 AWG, 259 strands minimum, tinned copper in accordance with ASTM-B33 with Class H stranding as specified in ASTM-B173.

D. The cable shall be marked at intervals of no more than 36 inches to show manufacturer's name, year of manufacture, AWG size, voltage class, type and thickness of insulation (mils), and type and thickness of jacket (mils).

2.2 500 KCMIL INSULATED CONDUCTOR

Cable shall be used for feeder tap connections on an overhead contact system with nominal voltage of 600 volts. The cable shall be in accordance with MBTA Specification P-25A, except as modified herein, which shall be included as Appendix B to this Section.

PART 3 - EXECUTION

3.1 INSTALLATION

Insulated conductors shall be installed either separately or as part of one or more assemblies in accordance with the Contract Drawings.

PART 4 - MEASUREMENT AND PAYMENT

4.1 GENERAL

No separate measurement or payment will be made for work under this Section. All costs in connection therewith shall be considered incidental to the item of work to which it pertains.

END OF SECTION